Seasonal variability of living benthic foraminifera from the outer continental shelf of the Bay of Biscay

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Résumé en anglais	Living benthic foraminiferal faunas of six stations from the continental shelf of the Bay of Biscay have been investigated during three successive seasons (spring, summer and autumn 2002). For the three investigated stations, bottom water oxygen concentration, oxygen penetration into the sediment and sediment organic carbon contents are all relatively similar. Therefore, we think that the density and the composition of the foraminiferal faunas is mainly controlled by the quantity and quality of organic input resulting from a succession of phytoplankton bloom events, occurring from late February to early September. The earliest blooms are positioned at the shelf break, late spring and early summer blooms occur off Brittany, whereas in late summer and early autumn, only coastal blooms appear, often in the vicinity of river outlets. In spring, the benthic foraminiferal faunas of central (B, C and D) and outer (E) continental shelf stations are characterised by strong dominance in the first area and strong presence in the second area of Nonionella iridea. In fact, station E does not serve as a major depocenter for the remains of phytoplankton blooms. If station E is not considered, the densities of this taxon show a clear gradient from the shelf-break, where the species dominates the assemblages, to the coast, where it attains very low densities. We explain this gradient as a response to the presence, in early spring, of an important phytoplankton bloom, mainly composed of coccolithophorids, over the shelf break. This observation is supported by the maximum particles flux values at stations close to the shelf break (18.5 g m− 2 h− 1) and lower values in a station closer to the coast (6.8 g m− 2 h− 1). In summer, the faunal density is maximum at station A, relatively close to more varied phytoplancton blooms that occur off Brittany until early June. We suggest that the dominant species, Nonion fabum, Cassidulina carinata and Bolivina ex. gr. dilatata respond to phytodetritus input from these blooms. In autumn, the rich faunas of inner shelf station G are dominated by N. fabum, B. ex. gr. dilatata, Hyalinea balthica and Nonionella turgida. These taxa seem to be correlated with the presence of coastal blooms phenomena, in front of river outlets. They may be favoured by an organic input with a significant contribution of terrestrial, rather low quality organic matter.
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